MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

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INTRODUCTION.

The MONTHLY WEATHER REVIEW for October, 1901, is based on reports from about 3,100 stations furnished by employees and voluntary observers, classified as follows: regular stations of the Weather Bureau, 159; West Indian service stations, 13; special river stations, 132; special rainfall stations, 48; voluntary observers of the Weather Bureau, 2,562; Army post hospital reports, 18; United States Life-Saving Service, 9; Southern Pacific Railway Company, 96; Hawaiian Government Survey, 200; Canadian Meteorological Service, 32; Jamaica Weather Office, 160; Mexican Telegraph Service, 20; Mexican voluntary stations, 7; Mexican Telegraph Company, 3; Costa Rican Service, 7. International simultaneous observations are received from a few stations and used, together with trustworthy newspaper extracts and special reports.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Meteorologist to the Hawaiian Government Survey, Honolulu; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Mr. Maxwell Hall, Government Meteorologist, Kingston, Jamaica; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; Commander Chapman C. Todd, Hydrographer, United States Navy; H. Pittier, Director of the Physico-Geographic Institute, San Jose, Costa Rica; Capt. François S. Chaves, Director of the Meteorological Observatory, Ponta Delgada, St. Michaels, Azores, and W. M. Shaw, Esq., Secretary, Meteorological Office, London; Rev. Josef Algué, S. J., Director, Philippine Weather Service.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. The Hawaiian standard meridian is 157° 30′, or $10^h\ 30^m$ west of Greenwich. The Costa Rican standard of time is that of San Jose, $0^h\ 36^m\ 13^s$ slower than seventy-fifth meridian time, corresponding to $5^h\ 36^m$ west of Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local standard is mentioned.

Barometric pressures, whether "station pressures" or "sea-level pressures," are now always reduced to standard gravity, so that they express pressure in a standard system of absolute measures.

During the temporary absence of Professor Abbe, Mr. H. H. Kimball has been designated Acting Editor of the REVIEW.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

Forecasts of the direction and force of the wind and the state of the weather along the transatlantic steamer routes from the American coast to the Banks of Newfoundland were issued daily at 8:00 a. m. and 8:00 p. m., seventy-fifth meridian time. These forecasts covered the first three days out of steamers bound east from United States ports, and the morning forecasts were published in the weather maps issued at Boston, New York, Philadelphia, Baltimore, and Washington.

Three storms apparently crossed the North Atlantic Ocean from the American to the European coast. The first of these passed off Newfoundland on the 1st, was encountered over mid-ocean during the 2d, and was central north of the British Isles on the 3d. During the 4th, 5th, and 6th this disturbance apparently deepened and caused gales on the British and northwestern European coasts. During the night of the 18–19th a storm of marked strength passed north of east over Newfoundland, was reported in mid-ocean on the 20th, and reached the Irish coast, with diminished intensity, on the 21st. On the morning of the 18th shipping interests were advised as follows:

Severe storm will move north of east over Newfoundland to-day and will be encountered over mid-ocean by steamers leaving European ports bound west.

During the night of the 24–25th a storm crossed Newfoundland, which apparently passed north of Scotland during the 27th and 28th.

Vessel interests on the Great Lakes and along the United States coasts were fully advised regarding the winds of the month. In the Lake region the only notable storm of the month occurred on the 12th and 13th. In the West Indies no well-defined hurricane appeared.

The frosts of the month were accurately forecast. The first killing frost of the month in the cranberry district of Massachusetts was forecast twenty-four hours in advance, and timely warnings were given of the frost that occurred in northern parts of the middle and west Gulf States. Frost was frequent in Washington and Oregon east of the Cascade Mountains.

On the 12th snow was reported in southwest Nebraska, and on the 16th the first general snow of the season occurred in western New York.

The night of the 16th the raisin interests of the San Joaquin Valley were notified of the rain which fell in that section on

the 17th, and rain warnings were issued the morning of the 23d for the heavy rain which fell generally in California on the 24th and 25th.

The following letter refers to a special long-range forecast for Lynchburg, Va., made upon the request of Mr. Withers P. Clark, of the Lynchburg Fair Association:

On behalf of the Lynchburg Fair Association, I wish to express to you our appreciation for the four days forecast furnished by you, at our request, just previous to our recent fair and carnival. In calculating the relative chances of success, the matter of weather entered as a most important factor, and the very accurate information we obtained through your kindness was valuable, indeed, and we thank you for it.

BOSTON FORECAST DISTRICT.

The month was uneventful. The first killing frost of the season in the cranberry regions, which are chiefly confined to the coast sections of Massachusetts, was correctly forecast. This is the only portion of the district where frost warnings are of special importance or value.—*J. W. Smith, Forecast Official.*

NEW ORLEANS FORECAST DISTRICT.

The only storm of the month on the Gulf coast occurred at Galveston on the 8th. The official in charge at that station hoisted warnings in ample season. Timely warnings were issued twenty-four hours in advance of the general frost which occurred over the northeastern portion of this district on the morning of the 14th.—*I. M. Cline, Forecast Official.*

CHICAGO FORECAST DISTRICT.

The month was notably free from disastrous storms and dangerous winds. The only notable storm of the month crossed the upper lakes during the 12th and 13th, and storm warnings were displayed in advance of it.—*F. J. Walz, Forecast Official.*

DENVER FORECAST DISTRICT.

No special warnings were issued during October, 1901.—*F. H. Brandenberg, Forecast Official.*

SAN FRANCISCO FORECAST DISTRICT.

The month, as a whole, was a dry one; between the 4th and 24th but little rain fell. A heated spell occurred from the 10th to the 12th, the 11th being the warmest day of the year to date; the maximum reached 91.4° at San Francisco on the 12th. The rains of the 17th in the San Joaquin Valley and of the 24th and 25th generally over California were accurately forecast on the 16th and 23d, respectively.—*A. G. McAdie, Professor.*

PORTLAND, OREG., FORECAST DISTRICT.

The month was unusually warm and dry. No damaging frosts occurred west of the Cascade Mountains, but freezing temperatures and frosts were of frequent occurrence east of this range. The closing days of the month on the Washington coast were stormy, and reports obtained from incoming Alaska steamers were to the effect that the gales were unusually severe off the Alaska and British Columbia coasts. Marine interests were kept fully advised regarding the force and character of the storms, and no casualties of consequence occurred.—*Edward A. Beals, Forecast Official.*

HAVANA, CUBA, FORECAST DISTRICT.

Several disturbances of minor importance appeared in the West Indies during the month, concerning which marine interests were fully advised.—*William B. Stockman, Forecast Official.*

AREAS OF HIGH AND LOW PRESSURE.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	1, a.m.	50	120	2, a.m.	41	101	1,250	1.0	1,250	52.1
II	2, a.m. to 4, p.m.	51 to 54	114 to 106	7, p.m.	39	75	3,075 to 1,825	5.5 to 3.0	559 to 608	23.3 to 25.3
III	9, a.m.	49	86	11, a.m.	48	54	1,475	2.0	738	30.8
IV	12, a.m.	50	120	16, a.m.	39	80	2,900	4.0	725	30.2
V	14, a.m.	51	114	19, a.m.	34	78	3,150	5.0	630	26.2
VI	18, a.m.	51	117	20, p.m.	44	73	2,200	2.5	880	36.7
VII	23, p.m.	53	108	26, a.m.	34	78	2,150	3.5	614	25.6
VIII	24, a.m. to 25, p.m.	38 to 53	114 to 108	29, a.m.	45	67	2,625 to 2,225	5.0 to 3.5	525 to 636	21.9 to 26.5
IX	30, a.m.	43	123	†4, a.m.	47	65	3,350	5.0	670	27.9
Sums							26,225	40.0	7,835	326.5
Mean of 11 paths							2,384		712	29.7
Mean of 40.0 days									656	27.3
Low areas.										
I	*30, a.m.	41	105	4, a.m.	45	64	2,325	5.0	465	19.4
II	3, p.m.	50	110	6, a.m.	44	70	1,950	2.5	780	32.5
III	6, p.m. to 8, a.m.	38 to 50	105 to 107	9, p.m.	43	86	1,550 to 1,350	3.0 to 1.5	517 to 900	21.5 to 37.5
IV	10, a.m. to 10, p.m.	38 to 51	100 to 114	12, a.m.	49	90	1,050 to 1,175	2.0 to 1.5	525 to 783	21.9 to 32.6
V	11, a.m.	26	97	18, a.m. to 16, a.m.	47 to 48	85 to 54	1,775 to 3,175	2.0 to 5.0	888 to 635	37.0 to 26.5
VI	13, a.m. to 16, p.m.	54 to 40	114 to 80	19, a.m.	48	54	3,875 to 1,525	6.0 to 2.5	646 to 610	26.9 to 25.4
VII	16, p.m.	54	114	20, a.m.	46	60	2,575	3.5	736	30.7
VIII	23, p.m.	54	114	27, a.m.	47	65	2,350	3.5	671	28.0
IX	26, a.m.	38	123	28, p.m.	53	105	1,725	2.5	690	28.7
X	29, a.m.	54	114	†1, a.m.	48	69	2,100	3.0	700	29.2
Sums							28,500	43.5	9,546	397.8
Mean of 14 paths							2,036		682	28.4
Mean of 43.5 days									655	27.3

*September. †November.

For graphic presentation of the movements of these highs and lows see Charts I and II.—*H. C. Frankenfield, Forecast Official.*

RIVERS AND FLOODS.

Nothing of interest occurred along the various river systems during the month of October. Stages were generally lower, except in the upper Mississippi. During the last few days of the month the stage of the Ohio River was so low that boats could not proceed above Maysville, Ky. On the upper Tennessee navigation for the larger boats was suspended on the 24th.

No ice has as yet appeared in the rivers.

The highest and lowest water, mean stage, and monthly range at 134 river stations are given in Table VII. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are: Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport on the Red.—*H. C. Frankenfield, Forecast Official.*